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ABSTRACT

This collection of conference papers examines some of the broad issues as well as specific institutional approaches to postbaccalaureate certificate programs. The first paper, "A Survey of Graduate Certificate Policies, Procedures, and Programs" (Wayne Patterson), reports on a survey of the members of the Council of Graduate Schools (CGS) and their stand on graduate certificate programs. The next four papers analyze programs at specific institutions and illustrate the considerations and challenges presented by certificate programs; they are: (1) "Graduate Certificates at Indiana University and Considerations for Graduate Educators" (Sheila Cooper); (2) "The NJIT Graduate Certificate Program" (Gale Tenan Spak); (3) "Graduate Certificate Programs at Arizona State University" (Bianca L. Bernstein); and (4) "Graduate Certificate Programs at the University of Colorado-Boulder" (Carol B. Lynch). The final paper, "Graduate Diplomas and the Ontario Council on Graduate Studies Appraisal Process" (David Leyton-Brown), analyzes ways bring nondegree graduate study into the appraisal process. Six appendices present data on and brief descriptions of the member institutions of the CGS that have certificate programs, an overview of the New Jersey Institute of Technology graduate certificate offerings, together with a profile of the 1997 class, and the approval process and primary elements of certificate programs proposals at Arizona State University. (RAB)

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Certificates: A Survey of our Status and Review of Successful Programs in the U.S. and Canada

Post-baccalaureate certificate programs have become a topic of intense interest in graduate education. The broad issues as well as specific institutional approaches are discussed in this collection of papers, which were presented at the 37th annual meeting of the Council of Graduate Schools in Washington, D.C. in December 1997. The first of the papers reports a survey of CGS members and their stand on graduate certificate programs. Following, are analyses of four U.S. institutions' programs, which illustrate well the considerations and challenges that certificate programs present. The last selection offers an analysis of the means to bring nondegree graduate study into the appraisal process in Ontario, Canada.

A Survey of Graduate Certificate Policies, Procedures, and Programs

by
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and
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Introduction

Over the past few months, colleagues in the Council of Graduate Schools have provided information on Graduate Certificate Programs at Council of Graduate Schools institutions. This information was solicited to bring focus to general policies for these programs and also to learn more about the nature of current graduate certificate programs.

A significant fraction of the CGS membership indicated interest in this process, with 35 members submitting information on their certificate programs and 75 members requesting this report.

All of the material is available electronically at <www.cofc.edu/~wayne/gradcerts.html>.

Policies and Procedures

Thirty-four United States universities and the Ontario Council of Graduate Schools, representing province-wide policy, provided the author with information regarding the policies and procedures involved in developing, approving, administering, reviewing, and terminating graduate certificate programs. The material sent was classified in terms of 33 different issues spanning the entire cycle of a program.

It should be noted that the categorization and extraction of information is entirely the author's. It cannot be concluded that because a given institution has no information listed on a given topic, that it has not addressed this issue—simply, it was not addressed in the material reviewed.

Description: Normally statements of the philosophy guiding institutions to define their graduate certificate programs, descriptions may range from philosophical to pragmatic. If there is any thread, it is that the certificate program is designed either to enhance the marketability of graduate students or to provide a service to a segment of the community through a short-term graduate program. Indeed, many universities try to serve both these objectives.

Proposers: What unit or units in the university have the authority to propose a new certificate program? Generally speaking, this authority resides with the faculty in the disciplinary area.

Proposal contents: Of what must the program proposal consist? A number of universities have submitted outlines of the proposal requirements and these are listed on the website.

Free-standing or add-on: Must the program be added on to an existing master's or doctoral program, or can it stand on its own? More schools allow both; some require the existence of a related master's or doctoral degree.

Overlap with degree: Can the student use some or all of the certificate courses toward a degree? Usually yes, at least for some courses. One institution allows only three credits to be used for a degree. Others may count most or all the certificate program courses. Some schools point out that a single degree course can only count toward one certificate.

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N. Gaffney

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Approval process: How are certificate programs approved? In most cases, the approval process is that used for degree programs, although in some cases it is abbreviated or accelerated. One university refers to a "fast track" approval process that takes 3 months instead of the normal 12 to 18.

Transcript: Is the student's completion of a certificate program denoted on his or her transcript? Only a few universities reviewed mentioned this; almost universally the answer was yes.

Hours: What is the required number of hours (or credits, or points) for a certificate program? The answers vary a great deal. The minimum seems to be 9, the maximum 30. The range is usually 12 to 18 semester hours.

Admission status: What students are admissible to certificate programs? There is considerable variation in practice, although it is perhaps possible to divide the admission requirements into two categories. Some institutions only allow students in their existing degree programs to be admitted to certificate programs. In this case, the admissions requirements for the certificate are somewhat irrelevant, since the regular requirements take precedence. In other institutions, students may apply only to the certificate program, and admission requirements range from degree program standards, to admissibility as a nondegree graduate student, to the requirement of an undergraduate degree. Of course, some institutions, perhaps the majority, have students in degree programs and "stand-alone" students in their certificate programs.

Admissions process: What is the admission process for certificate programs? In the case of the institutions in the first category above, this does not seem to be much of an issue. In the second case of stand-alone students or programs, it is usually a variation on the normal admissions process, at least for nondegree students.

Application requirement: Must the student apply to the certificate program before taking any of the program courses? The variation is large. A few schools require the application prior to taking any courses. Others allow for some subset of the courses to be transferred in. Some allow most of the coursework to be done before the application is submitted.

Post-baccalaureate or post-master's: Are the programs at the post-baccalaureate or the post-master's level? Most institutions reviewed have both.

Single discipline or interdisciplinary: Are the programs found within a single discipline or department? May they or must they be interdisciplinary? Most schools allow both. One institution responding has a policy that the certificate program must be interdisciplinary.

Administration: What unit or units administer graduate certificate programs? There is considerable debate as to whether these programs belong in graduate schools or schools of continuing education. In addition, some may be housed administratively in other academic units. Among the respondents, most report that the graduate school administers. One institution is proposing joint administration between the graduate school and continuing education.

Course restrictions: Are there restrictions on the types of courses that can be offered in certificate programs? Generally speaking, the courses must all be approved graduate-level courses, and the students must maintain the same standing as a degree student (usually a 3.0 GPA). One respondent requires that all courses in a certificate program must also be a part of a degree program.

Completion requirement: Though sparsely answered by respondents, universally the regular graduate school requirements for degree programs apply (again, usually a 3.0 GPA).

Duration: Is there a period of time within which the certificate must be completed? Only three universities indicated a time limit.

Cannibalizing existing programs: Two universities mentioned as a policy that certificate programs should not be encouraged where they might detract from or cannibalize existing degree programs.

Review: What is the nature of the review process for graduate certificate programs? Where addressed, the response was universally that the program review process for degree programs is used. One university has an automatic sunset provision for certificate programs.

Design of certificate: One respondent described a policy that the certificate design is approved by the provost.

Graduate Committee: Only one respondent provided a response about regulations pertaining

to the nature of the committee overseeing the program.

Fiscal: How is the budgeting of a certificate program addressed? In two cases, the programs must be self-supporting. In one case 10% of the program revenue returns to the operating department. It should be noted that in the cases of certificate programs that are primarily conducted in conjunction with a degree program, the costs are normally negligible.

Sunset: One institution has a sunset provision that terminates a certificate program after 3 years, with continuation granted on a year-to-year basis as long as the program is financially viable.

Termination: The same institution also allows for program termination at any time if the program is not financially viable.

Financial Aid Eligibility: One respondent has noted that students can only be eligible for financial aid in a certificate program if the program requires more than a certain number of credit hours.

Entry to Graduate Degree: Several universities have cautioned that the completion of a certificate program should not be considered qualification for entry into a degree program. Other schools use the certificate as a "second chance" for entry into a graduate degree program.

Classification of Student: One institution has a category of graduate student called the "Certificate Student." Other universities admit the certificate student as a nondegree graduate student. Others require that the student be enrolled in a degree program.

Residency Full-time Requirements: One respondent requires a student to be in residence for one half of the program and full time for one academic session.

To read the detailed responses by the 35 institutions on the 33 topics described above, please go to the Table of Responses on Policies and Procedures for Graduate Certificate Programs, which can be found at <www.cofc.edu/~wayne/certs/polproctable.html>

Programs

In their responses 26 universities included descriptions of their graduate certificate programs (In a few cases, proposed programs were also included). In many cases, full descriptions of the curricula were also provided.

The 26 universities collectively reported on 179 graduate certificate programs. The University of Denver reported the greatest number of programs with 37, followed by Massachusetts-Lowell with 22 and SUNY-Albany with 20. A list of the submitting universities by number of programs appears in Appendix I.

Analyzing the areas in which the certificate programs are offered, eight very broadly-described disciplinary areas accounted for approximately half of the offerings. The greatest number of programs is in computing-related fields (26), followed by business (13), and education and health care (11 each). See Appendix II for the complete listing.

To read the detailed responses by the 26 institutions on the 179 programs described above, please go to the Table of Responses on Programs for Graduate Certificate Programs, which can be found at <www.cofc.edu/~wayne/certs/progstable.html>. *A list of all respondents to the CGS certificate program survey can be found at* <www.cofc.edu/~wayne/certs/respondents.html>.

Compilation of E-mail Submissions

E-mail submissions from respondents provide insight into the nature of graduate certificate programs in the U.S. They follow in Appendix III in alphabetical order by school.

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Graduate Certificates at Indiana University and Considerations for Graduate Educators

by
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Research universities have long offered certificates at the graduate level to their students. For the most part certificates indicate a special body of knowledge that the student has acquired, most often outside the student's major field. Because of its strength in interdisciplinary programs and the number of its area-studies centers, Indiana University offers a wide variety

of certificates in very diverse fields--from animal behavior to Central Asian Studies to biblical and literary criticism.

Indiana's diverse graduate certificates come from several academic units so they do not have an absolutely uniform set of characteristics. Most, however, share a general structure in terms of numbers of credit hours and contours of coursework. The few exceptions are usually field-specific or set to a profession-wide standard like the Performer's Certificate in music, which rewards a very high level of accomplishment after much individual instruction.

Generally, credit-hour requirements for graduate certificates are greater than those for doctoral minors and less than those for the M.A. or M.S. degree. Most certificate programs require students to take 21 to 24 graduate credits (or seven to eight courses), while doctoral minors commonly call for 12 to 15 credits (four to five courses) and the M.A. or M.S. entails 30 to 36 credits. Thus, certificates involve more coursework than a minor but less than a major or master's degree. Graduate certificate programs usually specify two--less often one or three--foundation courses. The remaining credits come from courses the student selects from a prescribed list or from appropriate electives.

Most Indiana University students who earn certificates in the Graduate School are also working on advanced degrees, and their transcripts will record the award of the certificate along with the award of a degree. Those Graduate School students interested only in a certificate may receive one embellished with the University seal and the dean's signature, but their transcripts, while showing their coursework, do not usually show that a certificate has been awarded unless they have previously earned an advanced degree. However, the catalog and other materials describe the certificate and outline its requirements.

Some certificate programs are highly specialized. Indiana University School of Law-Indianapolis gives a certificate to students who augment their degree program by spending a year in France studying European and international law at the university in Lille. The Cognitive Science Program at the Bloomington campus awards certificates for subspecialties like modeling in cognitive science. The cognitive science certificates are an anomaly for Indiana University and perhaps should be revisited as they represent areas of the student's major interest.

Many certificates reflect applied knowledge. Sometimes that knowledge is highly technical--like the Indianapolis campus's certificate in hazardous waste management. At other times it is more generically professional like the graduate certificates in education earned by public school teachers. Many applied certificate programs are designed to add a special dimension to existing degree programs. Some allow students to hone research tool skills to a high degree--literary translation, statistics, or language immersion programs, for example.

Other certificates provide breadth to those engaged in degree programs that commonly specialize in depth. Area-study centers like I.U.'s Russian and East European Institute offer certificates that are geographically and culturally based. Other centers offer interdisciplinary certificates that are historically grounded, for instance, Victorian or Medieval Studies. Yet others like philanthropic studies carve out new interdisciplinary areas. Doctoral institutions often have research groups working on common problems across traditional disciplinary lines. Certificate programs that grow out of research centers inform and acknowledge graduate student participation in these interdisciplinary endeavors. They give future employers a more precise idea of the student's interest, preparation, and experience.

Administrators should identify areas where certificate programs would be appropriate and should encourage their development. However, in most cases concerned faculty propose and develop certificates just as they do degree programs. Certificate proposals must clear the department, program, research center, or school before they come to the Graduate School or the campus administration. The Graduate School should be prepared to help put appropriate program structure in place. Existing programs generally have clear admissions, advising, and curriculum processes and can expand on those. Research centers are less likely to have these kinds of structures and may be at a loss, although most end up with all their faculty as an admissions committee and with the center director as director of graduate studies.

While certificates sanctioned by Indiana University's Board of Trustees must go through a bureaucratic process, there is nothing to stop an individual program (or for that matter an individual professor) from eschewing university curriculum processes and giving a certificate. These certificates may be as elegant as a printer or a computer can make them. They do not, however, carry the University's seal, and they remain unrecognized by the wider University

community including the Graduate School bulletin.

Interest in certificate programs is currently burgeoning nationwide. The burst in the knowledge base that we have seen in the last several decades has created a demand for different ways of structuring knowledge, for more depth in some areas, more breadth in others. Advances in electronics, digitalization, and equipment are creating new fields while expanding old ones. Moreover, lack of job security and longer working lives have helped to fuel a push for continuing and more diverse education. We see this in the increased student interest in dual degrees or double majors.

For graduate educators the certificate offers a way to build programs without committing to a doctoral program. Certificates recognize the interdisciplinary nature of much current research. At the same time as they allow us to maintain traditional disciplinary programs, they provide flexibility and models for co-operation. Indiana University's program in cell and integrative biology on the Indianapolis campus, for example, involves between 15 and 20 departments in three schools (Medicine, Dentistry, and the Purdue School of Science), building on while augmenting traditional disciplines.

Certificates do not come without problems. They raise issues about the double counting of credits, a matter on which Indiana University takes a conservative stance. They can create quagmires when a student who has a certificate decides she or he wants to get a degree in the same field; university registrars and reputable institutions have long held that one should not get two degrees for the same work.

Many years ago requirements for university degrees, especially the most common ones, became standardized. That is not the case with certificates except those recognized by professional organizations nationally. Questions about the quality of a certificate are bound to arise. We shall all have to be wary of the growth in graduate certificate programs, especially where there are no graduate degree programs. There will doubtless be certificate mills just as there are diploma mills, and they may be more difficult to combat. But we should not be too smug. We will also have a challenge on our own campuses as certificates burgeon. Graduate schools or colleges need to take leadership in keeping ourselves and our campuses honest.

The NJIT Graduate Certificate Program

by
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During the last decade, through research, development and educational partnership arrangements, New Jersey Institute of Technology (NJIT) and a wide array of New Jersey's technology companies have been propelling the people and industry of the state and nation toward an improved quality of life in the 21st century. In 1994, the NJIT Continuing Professional Education determined to contribute to this momentum too by conducting a Graduate Certificate Program designed to help keep a highly technical workforce at the pinnacle of innovation and productivity.

About NJIT

Founded in 1881, NJIT is New Jersey's public research university. Illustrative of its reputation today, NJIT is ranked sixth by *Money Magazine* among U.S. science and technology universities, is classified as a Carnegie Foundation Doctoral II University and is ranked the nation's seventh most "wired" campus by Yahoo! Internet Life.

Situated on a 40-acre campus in the University Heights section of Newark and throughout the state at extension locations, and via electronic distance education, NJIT contributes to the region's development and economic growth through its programs of instruction, research and public service. Continuing Professional Education (CPE) is one of the many NJIT units designed to respond to industry needs. CPE's particular contribution occurs by providing responsive educational and professional development opportunities that cater to adults' need for lifelong learning both in credit and noncredit courses and programs that are conducted on campus; via electronics anywhere, anytime; and at locations throughout New Jersey including community colleges and worksites, offices, shops, training centers, and executive suites.

NJIT is also making significant contributions to the now burgeoning distance learning field through a leadership role that dates back to 1978 with the publication of *The Network Nation: Human Communications via Computer*, written

by NJIT Computer and Information Science Distinguished Professors S. R. Hiltz and M. Turoff. Stemming from this history, one of whose signposts is the trademarking of the term, Virtual Classroom®, today, CPE--NJIT's distance learning arm--delivers internet-based education at a volume that is impressive for a college of its mission, rank and size.

Underlying Need

In 1994, CPE began to realize that the economy had caused many individuals in managerial and professional technological specialty occupations to feel insecure about their jobs and others to see reduced opportunities in the careers they had been pursuing. While all experts hold that education is the key to career transition, CPE reasoned that for post-baccalaureate populations, earning a master's degree is not always appropriate. For example, some baccalaureate degree holders are deterred by situational and attitudinal constraints. That is, even though they have mastered work, family and community responsibilities and are academically qualified, they tend to question whether they are too old to learn, have the time or physical stamina required, or handle possible risk to self-esteem should their performance not immediately be on the mark. Others already credentialed with master's, doctoral and professional degrees are unlikely to pursue a second master's, but many want a resume-enhancing credential like a certificate.

Purpose, Goals, and Premises

These considerations led CPE to propose the establishment of a Graduate Certificate Program for the educational and potential employment benefit of adults seeking upgraded or new career paths in highly employable tracks. Concurrent with this adult-centered goal, the staff reasoned that a successful program could achieve three other goals of internal NJIT strategic importance:

> attract new categories of adult students to NJIT who would study for, at minimum, 1 year at credit loads equal to or heavier than what is typical for part-time students;
>
> lead some graduate certificate holders to choose subsequently to become fully matriculated NJIT M.S. degree candidates, particularly because they would have completed nearly half of the degree already; and
>
> produce significant and otherwise unanticipated revenue for the university at little additional cost.

In the ensuing discussions concerning internal goal attainment, three major premises arose, each of which subsequently drove the formal details of Graduate Certificate Program design.

Premise 1: Each graduate certificate would be worth 12 credits, earned by completing four specified courses, and would represent both a stand-alone credential in its own right and a "springboard" to a corresponding master's degree at NJIT or elsewhere.

Several corollaries of detailed program design followed from the M.S. springboard feature:

> Each certificate would need to be composed of existing or planned for NJIT graduate courses. Allowing for an interdisciplinary focus, this injunction resulted in the creation of certificates that, in essence, were subsets of courses from one or more existing NJIT graduate degrees.
>
> Its offering would require the establishment of solid relationships with defined roles among various NJIT units. It was agreed that CPE would handle the nonacademic aspects of planning, marketing, admissions, and budgeting. NJIT's academic schools would handle determination of the appropriate four-course sequence comprising a certificate and all aspects of instruction. NJIT's Graduate Studies Office would direct program evaluation and validation of certificate attainment so that students could seamlessly proceed toward master's degree study.

Premise 2: Certificates would facilitate at a rapid and convenient pace the continuing competence of practicing engineers, scientists, technicians, technologists and managers holding, at minimum, bachelors degrees in "hot tracks."

The corollary of the hot track feature:

> External criteria would need to be used to determine in which NJIT specialization area a certificate would be mounted. The criterion chosen was that the prospective area of specialization had to be germane to an occupation that the Bureau of Labor Statistics projected as "fast growing" by showing employment increases of at least 25% during the years 1990 through 2005.

The corollary of the "rapid and convenient pace" feature:

> Each certificate would need to be suited for completion in one calendar year, since busy professionals require rapidity, and also would need to be suited for completion in tandem with other endeavors of an equally demanding nature like full-time employment and family responsibilities. To accomplish this, each certificate, to the fullest degree possible, would be made available through classes conducted via distance learning techniques that demand equal effort but do not require formal classroom attendance.

Premise 3: The Graduate Certificate Program would be conducted at the margins of expense, since each credential in fact was composed of NJIT courses being offered anyway as part of NJIT M.S. degrees and since NJIT CPE already conducted an extensive distance learning activity. Essentially the Graduate Certificate Program could be seen simply as a repackaging of NJIT resources, therefore, to ensure success new expenditures would be required in only the one area of marketing or promotion.

To keep marketing or promotion costs in line, the following corollaries ensured that:

> only a finite number of certificates could be offered at any point, with the ideal number around 10; and
>
> nonperforming certificates would need to be retired on a regular basis to make room for new candidates.

Gaining Acceptance of the Proposed Program

The process underlying approval of the proposed program included presentations at NJIT's Graduate Council, the Committee on Academic Affairs, and the Dean's Council. Three primary concerns were voiced and overcome with the following logic and agreements.

Since graduate certificate students would be studying in the same classes as full-fledged master's degree students, some academic departments feared that the value of the NJIT master's degree could be undermined. To overcome this, graduate certificate applicants, while permitted a simplified admissions process, were nonetheless required to meet NJIT academic department standards for regular admission as M.S. degree candidates and, at the determination of academic departmental chairs or designees, also were required to complete ancillary (bridge) courses if needed.

Since the graduate certificate would yield a stand-alone credential, some NJIT departments feared that the new program would depopulate regular master's degree programs by drawing into its ranks current or potential NJIT M.S. candidates. To safeguard against this, it was decided that enrollees would be afforded nonmatriculated status thus making them ineligible for financial aid. This, in turn, required the Office of Graduate Studies to agree to grant a waiver from its nine credit policy of permissible nonmatriculated enrollment.

Since the Graduate Certificate Program was designed to attract new categories of students to NJIT, some faculty feared that it would increase their academic advisement workloads. This reservation was overcome by helping NJIT graduate advisors understand that their workloads would be less than typical for this category of student, because, by definition, graduate certificate course options were pre-determined and because CPE would maintain adherence to admission standards.

Areas of Graduate Certificate Study

The Graduate Certificate Program has been in operation for four academic years. The Four Year Overview of NJIT Graduate Certificate Offerings in Appendix IV lists the names of available certificates by academic year. While 15 credentials have been developed overall, in any one year at most 11 different credentials are offered. In addition, over time, four certificates have been retired. Furthermore, of the continuing and new certificates available in 1997-1998, six certificates can be completed in their entirety via distance learning (object-oriented design, project management, programming environment tools, telecommunications networking, health care information systems, and pollution prevention and control). With one exception (managing human resources), all the others have at least one course available for study via distance modalities. In fact, in staggered stages, this certificate and the other partially distance-based credentials are expected to become completely distance-based.

Outcomes

Three goals were identified in 1994 when the NJIT Graduate Certificate Program was conceived: a) increase overall NJIT enrollment including from strategically desirable categories of adult students; b) upon completion of the credential, convert a fair number of credential awardees to fully matriculated NJIT M.S. degree candidacy; and c) produce significant revenue.

Indeed, as the Profile of Fall 1997 Graduate Certificate Class in Appendix V suggests, all goals have been achieved. In the three semesters noted on the table, ever-increasing numbers of students have enrolled, so that in the Fall 1997 semester, 283 students made 342 credit course enrollments. Included among these enrollees are higher than average representation from key NJIT targets: women and out-of-state residents. Furthermore, at the start of the Fall 1997 semester, a total of 66 students had earned a graduate certificate. Thirty-five of these had already continued to the corresponding NJIT M.S. degree program. Estimations of total revenue produced for NJIT from tuition and fees in the fall semester alone amount to nearly $382,000.

Lessons Learned

The most successful certificates are those that can be delivered in their entirety via distance learning techniques, because working adults find that only this mode of study treats their very busy days and nights kindly.

The program has succeeded in attracting almost exclusively currently-employed adults although in its planning stages, it was anticipated that unemployed people would be interested as well. The failure to attract the unemployed is most likely due to the cost of the program, which although it is identical to what part-time NJIT graduate students pay for identical credit loads, nonetheless equates to nearly $5,000 for the full credential. An unemployed person would more than likely find this figure unmanageable.

Even though each certificate was externally validated by fast growth, not every one was successful. The Overview (Appendix IV) indicates that during a 4-year period, certificates in technological entrepreneurship, construction management, environmental site remediation, and geographic information systems drew few enrollees and were retired. Each of these programs had one key course in which the highly employable skill was being taught. It is possible that enrollees realized that a four-course sequence was beyond what was appropriate or required to obtain competency and thus shunned these continuing education opportunities.

Over the life a particular certificate, it sometimes becomes necessary to make changes in the composition of its four constituent courses. For example, an ongoing certificate might be revised to take into account that an NJIT academic department introduced new courses, or an existing certificate might be revised to provide enrollees with more choices. Offering the key course from a retired certificate is one.

As the Graduate Certificate Program got underway, there were some technologically sophisticated employment areas key to New Jersey's economic development that did not meet the stated eligibility criteria and therefore could not be candidates for graduate certificates. These areas were not ranked as "fast growing" according the U.S. Bureau of Labor Standards. However, they were "fast growing" in New Jersey--a state known for its high concentration of high technology companies. To meet CPE's goal of establishing educational opportunities responsive to industry needs, NJIT offered New Jersey firms the prospect of beginning "Company Collaborative Graduate Certificates" at their sites for the exclusive benefit of their workforce. As a result, specialized programs have or are being established at Lucent Technologies, Inc., National Starch and Chemical Company, Dendrite International, Inc., and Dialogic, Inc.

At the outset of the certificate program, it was acknowledged that the MIS or student and financial data systems of NJIT were not set up to easily accommodate the Graduate Certificate Program, which often provides courses across more than one academic department. In addition, it was agreed that for a program premised on operation at the margin, it would be inappropriate to request significant MIS realignment. Fortunately, however, this realignment is evolving naturally. Larger university issues including Year 2000 computer conversions mean that NJIT will unveil in October 1998 an upgraded computer student system that has been designed to handle Graduate Certificate Program data needs as well. During the first 4 years of operation, a simple PC-based "shadow" system handled NJIT graduate certificate data services.

Graduate Certificate Programs at Arizona State University

by
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Arizona State University has been offering graduate-level certificate programs for a number of years. Although the University offers a number of noncredit certificate programs, this

discussion addresses primarily the issues associated with credit-bearing, academic certificate programs at the graduate level.

ASU Graduate Certificate Programs

ASU currently offers 11 programs (hazardous materials and waste management, gerontology, medieval studies, museum studies, post-master's nurse practitioner, renaissance studies, scholarly publishing, translation and transportation systems). The interdisciplinary programs that involve faculty and courses from multiple academic units are administered directly by the Graduate College, with the exception of the medieval and renaissance studies certificates, which are offered through the Arizona Center for Medieval and Renaissance Studies. The others operate within their disciplinary units.

The majority of existing certificate programs are commonly taken by students to augment their graduate degree programs. Several certificate programs (e.g., gerontology, museum studies, scholarly publishing, and translation) also admit nondegree graduate students. All but the certificate in hazardous materials and waste management are offered for graduate credit. The number of credit hours required generally ranges from 12 to 24, although certain professional preparation programs (e.g., scholarly publishing and post-master's nurse practitioner) are somewhat longer.

Advantages to the Institution

There are a number of distinct advantages to offering certificate programs in addition to a full array of graduate degree programs.

Internal approval. In the Arizona higher education system, an elaborate set of procedures must be followed to gain approval to offer new degree programs. The process is two-tiered. Authorization for planning must be sought from the Arizona Board of Regents and later, implementation authority must be obtained. Each tier begins with at least six internal levels of review and approval followed by approval at each of the other state universities. With regents' concerns about degree duplication and productivity and efforts to forge inter-university collaborations and expand distance education, there are many considerations that lengthen the time of implementation to as much as several years in some instances.

By contrast, new certificate programs are approved entirely within the university. Although the internal levels of review still occur, the process is shortened considerably. In the case of the new transportation studies certificate, for example, the Graduate College explored the possibilities with the lead faculty in the late spring and the final administrative approvals were obtained in January, including the summer period when there was no action.

Flexibility. Certificate programs enable an institution to respond rapidly and effectively to current local and regional demands. When local industry requires the strengthening of the workforce in a particular area or economic or social conditions present pressing issues and preparation needs, the university can more readily be responsive to and partner with business and community groups through certificate programs. When the needs served by the certificate program diminish or are replaced by other needs, the certificate program can be disestablished or modified more readily than a degree program.

Interdisciplinarity. Interdisciplinary research and instructional efforts are at the cutting edge of higher education. Certificate programs can more easily than new degree programs bring together the intellectual resources available in the university without regard to traditional disciplinary boundaries and cultures.

The effort of and courses taught by one or two faculty members from each participating department can comprise a creative and interdisciplinary certificate program without affecting the affiliations of the faculty involved. ASU's interdisciplinary gerontology program, for example, draws on the expertise of 54 faculty from 26 departments and brings to students substantially greater exposure to different perspectives than could a typical department. Similarly, the ASU certificate programs in medieval studies, renaissance studies, and transportation systems are interdisciplinary in nature and delivery.

Collaboration. Certificate programs enable faculty and units to forge new relationships not previously envisioned. Beyond the advantages of interdisciplinary programming, new collaborations can cross even campus boundaries.

In a local example, ASU Main Campus and ASU West Campus, each has its own faculty interested in gerontology, yet only ASU Main had approval to offer a graduate certificate and undergraduate minor in gerontology. Rather than building separate and potentially competing programs on two campuses of "one university geographically distributed," the ASU graduate dean and the ASU West vice provost and dean

brought the two faculties together to develop one collaborative gerontology certificate program.

Students can now take courses offered by faculty from one or both campuses and receive an ASU, not campus-based, certificate in gerontology. Codirectors work with a joint Executive Committee of faculty to agree on curricular matters, coordinate course offerings, and develop joint promotional materials and recruitment efforts.

The principles we developed for redesigning our offerings as a collaborative gerontology certificate program now form the basis of statewide guidelines for the development of new inter-institutional collaborative degree programs in Arizona. Thus, proposals for a new tri-university (ASU, University of Arizona, Northern Arizona University) Master of Engineering program and a new collaborative Ph.D. in the history and theory of art (ASU and the University of Arizona) have been based on these principles developed for the collaborative gerontology program.

Incubation. Certificate programs can be a flexible way for universities to be responsive to contemporary needs while also testing the waters for more enduring degree programs. Compared to certificate programs that are designed for and populated by a small market segment, some certificate programs are more broadly appealing and may have high potential for expansion into full degree programs. Offering certificate programs to incubate degree programs enables faculties to shape the curriculum and institutions to test the market before making commitments to new faculty lines and other resources.

Recruitment. Certificate programs can serve as an effective tool for recruiting new students to existing graduate degree programs. In instances where nondegree students can enroll in certificate programs, community members engaged in lifelong learning, re-entry students, adults who are considering re-careering, or those seeking professional development may enter a short-term certificate program only to find the wealth of resources available at the university and the opportunities available through full degree programs. At ASU, for example, a substantial proportion of students who enroll in the museum studies certificate program choose to enter the outstanding graduate programs in anthropology. There is no more effective recruiting tool for a degree program than a positive experience with the faculty and courses of the program and institution.

Service to community. The capacity for and willingness of institutions to be responsive to local and regional needs in a timely fashion is a central aspect of service to the community. This service has typically been defined as the work of individual faculty members, faculty service projects, field research, service learning, and the like. Certificate programs, when designed to meet specific local industry and community needs and formed in association with community representatives, can be a powerful way to enhance the service mission of the institution.

In the Phoenix valley, for example, transportation has become a pressing concern yearning for viable solutions. ASU's new transportation systems certificate program is designed to enhance degree programs in planning and environmental resources, civil and environmental engineering, geography, and aeronautical engineering technology. The introduction of this certificate program has already strengthened the relationship of the university with the state Department of Transportation.

Areas of Concern

There are a number of issues to be addressed as an institution develops and delivers graduate certificate programs. Some concerns have to do with logistical matters, while others are more substantive in nature.

Enrollment versus degree productivity. In Arizona, as in many states, governing bodies are closely scrutinizing and evaluating the number of graduates produced by each university at undergraduate, master's, and doctoral levels. While students who take courses as part of certificate programs may swell course enrollment figures that are important to formula funding, they do not contribute to degree productivity figures. In fact, in instances where students take only a certificate program without concurrently or subsequently enrolling in a degree program and where indices of degree productivity are overemphasized, the institution may actually be disadvantaged by allocating resources for this purpose. Additionally, in universities that still function with antiquated Student Information Systems, it may be difficult and costly, if not impossible, to post certificates on transcripts and develop production reports about students in certificate programs in ways that are comparable to degree program productivity.

Differentiating certificate graduates from degree graduates. Thus far at ASU, we have purposefully avoided offering certificate programs in areas where graduate degree

programs are available. We want to actively discourage the possibility that students would use a short certificate program as a substitute for a full degree program. We wish to have clear "product identity," so that potential employers understand fully the credentials and level of preparation of our graduates. At some institutions where certificate programs may be viewed as "mini degree programs," the concerns about student utilization and employer perceptions may be significantly more troublesome. Even at ASU, however, we occasionally encounter difficulty when nondegree certificate students later wish to apply the courses and credits they have taken to certain degree programs.

Time-to-degree. Most universities are focusing on time-to-degree issues at the graduate level. At ASU, a metropolitan Research I institution and the fifth largest university in the country, a large proportion of graduate students are part-time. When part-time students choose to supplement their graduate degree program with a concurrent certificate program, it is likely that the completion date of the degree will be somewhat delayed, depending on the number of transferable versus unique credits. Since current estimates of time-to-degree are obviously based only on degree completion, neither the numerical complexities nor the accrued value experienced by "degree plus certificate" students are adequately assessed. Adoption of a new standard, such as Maresi Nerad's notion of "time to first position," when accompanied by a "quality of first job" assessment, may be a more effective means to measure progress and outcomes.

Fieldwork. Since many certificate programs are of a more applied nature than traditional graduate degree programs, they are more likely to entail field experiences of some kind. Providing high-quality and well-supervised fieldwork experiences is a resource-intensive aspect of university work. In some universities and higher education systems, supervision of fieldwork is not weighted comparably to in-class lecturing time, and a small group of students engaging in an applied project or practical experience in the field is considered to be a less efficient activity than a large number of students in a class. In these institutions and systems, the allocation of resources to certificate programs with fieldwork components may be difficult to defend. When industry and community agency personnel are prepared to commit some of their time to field supervision, this commitment must be aligned with workload paradigms driven by that setting, and university faculty and staff must still be responsible for coordinating and overseeing the arrangements.

Hidden costs. In general, for-credit certificate programs tend to be substantially smaller in terms of student enrollment than are degree programs. At the same time, in the instance of interdisciplinary programs, there is often a large number of faculty involved from multiple academic units and colleges. In many instances, certificate programs pool some of the courses already offered in one or various units, thereby perhaps creating the impression that offering the new certificate program will incur only minimal cost.

As with any high quality academic program, program leaders, directors, or coordinators are necessary, as are advisors and other forms of program and student support. And yet, in many cases, particularly when interdisciplinary, certificate programs are operated at the margin. Program leaders are frequently not compensated as administrators; faculty serving as advisors may not get proper credit from their home departments; courses taught may not fully accrue to the instructor and the instructor's unit; and programs may receive inadequate budgets to develop promotional material, offer workshops, participate in professional conferences, or support students. Care should be taken to fully recognize the costs associated with offering certificate programs and to compare these costs to those of regular degree programs that generally attract large numbers of students.

Certificate versus certification. Although certificate programs are by no means a new phenomenon, there is no clear understanding by the public, and often by higher education institutions themselves, of what a certificate represents. After all, many trade, technical, and proprietary schools offer certificates upon the completion of a course of study perhaps as brief as one day. Indeed, within our universities, individual faculty or programs produce "certificates" for distribution to students or community members as an honor or recognition of participation in a workshop or event.

One area in which some universities may be inadvertently confusing the public is teacher education and other professions regulated through state certification. Promotional literature and catalogs that suggest that the institution's teacher education program, for example, leads to certification should clearly indicate that the certifying body is the state, not the university. While the university may offer a post-baccalaureate certificate, for example, there is

no assurance that the certificate holder will be granted certification by the state. This is an important distinction that has both legal and consumer ramifications.

Role of the Graduate College in Certificate Programs

At Arizona State University, the Graduate College has taken an active stance with regard to implementing and supporting certificate programs and involvement has been with both existing and new for-credit certificate programs. Noncredit certificate programs are handled through the ASU College of Extended Education.

Create a formal role. Historically, there existed no systematic way for the Graduate College staff or the Graduate Council to review proposals for programs that were not degree-granting. With the advent of a clearly articulated curriculum approval process, the Graduate College worked with the provost's office to ensure that every proposal for establishing, modifying, changing the name of, or disestablishing a graduate program, whether certificate or degree-granting, would be reviewed and approved by the appropriate Graduate College staff and the Graduate Council (See table at Appendix VI). The creation of a formal role in the sequence of approvals enabled ASU to streamline the review and approval process and to specify timelines for each level of review.

Develop set of guidelines and procedures. In Arizona, degree proposals are prepared according to a format provided by the Arizona Board of Regents who grant final approval to each proposal. To ensure quality control and to systematize the approval process for certificate proposals, the Graduate College prepared a set of guidelines and procedures to be followed in proposing and gaining approvals for establishing, modifying, changing the name of, or disestablishing a certificate program. These guidelines and procedures are considerably less cumbersome than those for degree proposals. A list of the primary certificate proposal elements appears in Appendix VII. The elements developed for graduate certificate programs are now in place for undergraduate certificate program proposals as well.

Provide assistance and guidance. In the Curriculum Approval Process described above and in Appendix VI, faculty are encouraged to consult with Graduate College staff early in the process of proposing a certificate. This consultation affords an opportunity for assistant and associate deans to provide substantive as well as procedural advice.

We have found that early identification of potential problems enables the proposing faculty to make timely modifications that speed the approval process. Graduate College staff are able to anticipate concerns of the Graduate Council and make suggestions about new partnerships or approaches. This assistance is generally welcomed by the faculty and unit administrators and serves to reinforce the service role of the Graduate College in the university.

Exercise quality control. Careful review of proposals by the Graduate College and the Graduate Council assures the level of quality control we value for sustaining rigor and academic integrity in all our graduate offerings. In the review of proposals, for example, questions have been raised regarding the omission of appropriate field experiences, the academic substance of a capstone project, the nature of core courses and experiences, the length of a certificate program compared to degree programs, and so on. Discussion of these issues with the proposing faculty has resulted in the strengthening of the proposal and the resulting program.

Serve as an incubator for new ideas. Certificate programs allow a university to experiment with new concepts without or before making the much larger investment required for full degree programs. The Graduate College can play a vital role in facilitating the testing, validation, and refinement of a potential degree program by first encouraging the establishment of a certificate program in the area. At ASU, the new transportation studies program provides an example of this approach. Similarly, one academic unit has received major external funding to establish a program in a new area. Rather than implementing a new degree program, the Graduate College has suggested meeting the goals of the sponsor by beginning with and testing a certificate program. If the certificate program proves successful and a market demand can be demonstrated, it can be converted to a degree program at a later date.

Provide a home for interdisciplinary programs. Most graduate colleges host a number of interdisciplinary degree programs where faculty from various academic units collaborate to offer a program under the administrative aegis of the graduate college. This same structure may apply to interdisciplinary certificate programs as well. At ASU, the Graduate College hosts the interdisciplinary gerontology (ASU Main) and transportation systems certificate programs. As

with interdisciplinary degree programs housed in the Graduate College, the graduate dean, with appropriate consultation and advice, appoints a director of the program and an Executive Committee who serve together as the governing body for the certificate program. For these certificate programs the graduate dean and the program director co-sign the student's certificate at the completion of the program.

The Graduate College has recently implemented a process where each interdisciplinary degree or certificate program hosted by the Graduate College develops or updates and approves a set of bylaws. These bylaws have common elements that include criteria for the appointment of core and affiliate faculty, appointment procedures and terms of office for and responsibilities of directors and Executive Committee members, and appeal and grievance procedures for students. These processes enable the Graduate College to enjoy a good working relationship with the program faculty and affiliated unit administrators.

Mediate disputes. Faculty members from different units or even within the same unit frequently have different perspectives on academic issues. Indeed, a characteristic strength of universities is the nurturing and fostering of diverse perspectives. Yet the establishment or offering of degree and certificate programs occasionally provokes or exacerbates turf and control issues within the university. The use of certain prized titles or terms, the perception that particular courses or sequences may be duplicative of efforts elsewhere, and the possibility that a new certificate program may draw students away from another area, are examples of many issues that are ripe for inducing conflict.

The Graduate College can be helpful to faculty and administrators involved in disputes by mediating conflicts and facilitating conflict resolution, promoting collaboration, suggesting alternatives or compromises, and serving as advocates. At ASU, Graduate College facilitation and intervention have been effective both in reducing conflict and in strengthening the perception of the Graduate College as providing constructive assistance.

Conclusion

Graduate certificate programs can be an important aspect of a university's inventory of academic and professional programs. To assure quality and benefits to students and the university, and to reduce the likelihood of adverse impact, a set of guidelines and procedures is helpful in directing university activities with respect to certificate programs. The Graduate College can play a vital role in developing and encouraging adherence to these guidelines and procedures, and in facilitating and supporting graduate certificate programs.

With the recent CGS plenary session on certificate programs and with the publication of this special issue of the *Communicator*, we have made substantial strides in understanding the current status of certificate programs at U.S. and Canadian universities. The important next step will be for the Council of Graduate Schools to develop a definition and set of standards for graduate certificate programs. This would assist universities with sustaining quality control and clarifying for the public what a university certificate represents.

Graduate Certificate Programs at the University of Colorado-Boulder

by
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Overview

The primary emphasis of post-baccalaureate certificate programs at CU-Boulder is the interdisciplinary graduate certificates, which enable graduate students to explore an interdisciplinary area of study while pursing a master's or doctoral degree in a traditional discipline. These certificate programs provide breadth and recognition of additional coursework, interdisciplinary seminars, and research. They are in great demand. Among other things, certificates are seen as improving employment opportunities in both academic and other sectors.

Recently, we've also seen a demand for certificate programs for nondegree students. These programs invariably target a specific employment need.

History of Interdisciplinary Certificates

CU-Boulder's first graduate certificate programs--population studies and environmental policy--were approved in 1990. The most recent programs were approved in fall 1997--in remote sensing and in optical science and engineering.

Unlike the approval process for new degrees, proposals for certificate programs are not sent to the Board of Regents or Colorado Commission on Higher Education.

The 10 certificate programs that have been approved are:

- atmospheric and oceanic sciences
- behavioral genetics
- biotechnology
- cognitive science
- environmental policy
- media and communication
- neuroscience and behavior
- optical science and engineering
- population studies
- remote sensing

Approximately 240 graduate students take part in seven of these certificate programs. Three programs are so new that they have not yet enrolled students.

Each of the certificate programs is truly interdisciplinary, and all involve faculty and students from more than one academic department. All offer educational and research opportunities for graduate students in interdisciplinary fields. A few examples are:

- Environmental Policy: economics, geography, philosophy, political science, psychology, sociology, law, engineering, biology

- Cognitive Science: computer science, education, linguistics, philosophy, psychology, environmental design

- Remote Sensing: aerospace engineering, astrophysical and planetary science, electrical engineering, geography, geology, atmospheric and oceanic sciences

CU-Boulder's certificate programs have a variety of geneses, although these are not mutually exclusive. Several are associated with interdisciplinary research institutes and acknowledge the additional education and training that graduate students receive through their affiliation with these institutes (e.g., behavioral genetics, population studies, cognitive science). Some certificate programs were developed to provide training in a new area of research (e.g., biotechnology, environmental policy). Some grew out of interdisciplinary federal training grants (e.g., optical science and engineering, behavioral genetics, biotechnology). Some are directly related to expanding industries (e.g., media and communication, optical science and engineering, biotechnology). One, remote sensing, focuses on a widely applied emerging research technique.

Professional Certificates

CU-Boulder currently offers only one professional certificate--engineering management. This type of certificate differs in a number of ways from the other certificate programs. The participants are nondegree students, often people with full-time jobs in the industrial sector seeking additional skill training through distance learning. The professional certificate courses are offered through Continuing Education (which includes distance education) and are targeted toward people in the workforce rather than resident students.

As a result of increasing demand for professional education, the University of Colorado-Boulder recently lifted the requirement on interdisciplinary certificates that required students to be registered in regular degree programs. They are now available to nondegree students with advanced degrees or relevant professional experience.

Establishing Graduate Certificate Programs

At CU-Boulder, the Graduate School had actively encouraged faculty to create new certificate programs. Certificate programs are designed and implemented by the participating faculty, with approval and oversight by the Graduate School.

Issues to be considered in developing a certificate program:

- What is the focus of study for the certificate and how does it complement the formal degree programs?

- Who are the intended participants in the program? What prior expertise or education is required for students and how will they benefit from it?

- How will the training be delivered? Through existing courses from several departments, through courses supplemente . by an interdisciplinary introduction or capstone course or through research opportunities?

- How will the program be administered? Who oversees the budget, curriculum design, registration paperwork, etc.?

- How will the program be financed? What is the funding source for creating the program

and offering it (course buyouts, administrative support)?

General Requirements for Certificate Programs

All graduate certificate programs require the approval of the dean of the Graduate School. The faculty developing a certificate program submit to the Graduate School a proposal that follows set guidelines (see Procedures for Applications below). That proposal is reviewed by the Graduate School staff and by the Executive Advisory Council of the Graduate School, which makes a recommendation for approval to the dean. Certificate programs do not require further approval from the Board of Regents or the Colorado Commission on Higher Education.

Procedures for Applications

Following are the guidelines that the Graduate School has established.

Proposals for Interdisciplinary Certificate Programs

- Statement of Purpose. The statement of purpose addresses the education and scholarly goals of the program and the relation between the proposed program and existing degree programs on campus.
- Statement of Need. The statement of need provides evidence of sufficient student interest to justify implementing and supporting the program.
- Statement of Congruence with Campus Goals. The statement of congruence indicates how the certificate is related to the mission and master plan of the Boulder campus.
- Statement of Resources. The statement of resources describes in detail the personnel and facilities needed for the program and their sources. The statement includes present and projected needs in faculty, facilities, equipment, library holdings, and space.
- Description of Curriculum. The description of curriculum details the program's requirements, including those for credit hours, research hours, and coursework. It identifies what courses are used in the program, how frequently they are offered, and what new courses are proposed.
- Faculty List. All teaching and research faculty involved in the certificate program are listed, along with their graduate faculty status.
- Program Administration. The program administration is described, including the following details:
  - program director and director selection process;
  - group responsible for overseeing program and curriculum;
  - persons responsible for advising students and monitoring their progress; and
  - procedure for awarding certificates.
- Admissions Requirements. The proposal describes the specific admission requirements for current students and for potential transfers. It also discusses the projected enrollments for the program.
- Endorsements. All chairs or directors whose departments or programs are taking part in the proposed interdisciplinary certificate program submit statements of endorsement.

All groups submitting proposals for interdisciplinary certificate programs are required to address these issues in a formal proposal and may not begin advertising or recruiting for the program until it has been approved by the dean of the Graduate School.

Potential Problems

- Demands on student participants: Students participating in certificate programs will be responsible for more work than graduate students solely pursuing traditional degrees. They may have an increased time-to-degree, which will impact their financial commitments and the Graduate School's required reports to the state on student progress. Further, the demands of the certificate program may compete with those of the student's degree program, emphasizing the need for careful faculty mentoring. Finally, students will be taking courses through the certificate program in new areas or departments, which necessitates cross-disciplinary mentoring.
- Cross-disciplinary administration: Since certificate programs offer courses that cross disciplinary lines, the responsibility for teaching those courses is not always clearly defined. As a result, the university must have a means to provide teaching credit for these courses and the students involved. Likewise, staff time is needed to handle admissions, registrations, and approvals for

a certificate program; to which unit these responsibilities fall may not be clear. Finally, a department or unit will need to take ownership for the certificate program to the extent that it is accountable for its quality and delivery.

- Cross-disciplinary resources: Unless only preexisting courses are used, a certificate program will require faculty expertise and time in course design and teaching. Since several departments will use the program and benefit from it, problems may arise in determining faculty contributions and effort. Likewise, the sharing of facilities like classrooms and laboratories may require careful planning and coordination.

- Extra-departmental funding: Since certificate programs are offered outside regular departmental budgets, support for their implementation and maintenance may be difficult to obtain. CU-Boulder's certificate programs are funded in a variety of ways. The Graduate School provided seed money for several, which after a few years were expected to become self-supporting. The research institutes have supported several, and one or two are supported through federal training grants. The logical mechanism, joint departmental funding, is being used by several as well.

- Competition with other academic programs: At CU, competition between certificate and academic programs has not become a problem. These difficulties have been avoided in part because the procedure for setting up a certificate program has meant that departments have not created them frivolously or for competitive purposes.

Benefits

So far the Graduate School has seen an impressive array of benefits from its certificate programs, and they are gaining in popularity as a means of providing interdisciplinary breadth. Since so many areas of cutting-edge knowledge do not coincide with departmental boundaries, certificate programs provide an efficient and cost-effective way to bring new ideas and skills to the students. At the same time, the certificate programs have increased interdepartmental synergy by providing a mechanism by which faculty can collaborate interdepartmentally in both their teaching and research roles. The certificate programs optimize the use of campus resources by allowing the sharing of faculty expertise and research facilities.

Certificate programs allow the institution to keep up to date in discoveries and changing technologies. Further, the state-of-the-art education and facilities help the university attract students and faculty whose interests focus on new areas or use novel methods. At the same time, they allow the university to keep up with the skills and expertise demanded by modern businesses and industries that employ the university's graduate students.

Roles of the Schools and Colleges

The Graduate School at CU-Boulder develops guidelines and defines the expectations for interdisciplinary certificate programs. It retains the ultimate authority for approval of the certificates. Its Curriculum Committee approves all courses given for graduate credit, including those offered through Continuing Education.

The originating departments and schools and colleges provide the inspiration, development and implementation of graduate certificate programs. They also may negotiate with business and industry for the creation of professional certificates and for delivery of coursework.

Continuing Education, which reports to Academic Affairs, provides the administrative infrastructure for registration, delivery and credit for the courses for professional certificates.

Conclusion

During the 8 years since the first certificate program was approved, the Graduate School has witnessed growing demand and increasing numbers of interdisciplinary certificates. UC-Boulder anticipates increasing demand for professional certificates, especially those utilizing our capacity to offer the coursework via distance education technology. The institution is fortunate that the dean of Continuing Education believes that it is in her interest and that of the population she serves to have the Graduate School certify the academic quality of the coursework of professional certificates.

Graduate Diplomas and the Ontario Council on Graduate Studies Appraisal Process

by

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The Ontario Council on Graduate Studies (OCGS) is an organization created by the publicly-assisted universities of the province of Ontario, in Canada (With the exception of theology, graduate degrees in Ontario are offered only at publicly-assisted universities). OCGS operates an appraisal system that promotes, maintains and improves the quality of graduate education in Ontario and provides the government, the universities and the public with the necessary assurance of this quality. Through its appraisal process, OCGS assesses the quality of all proposed and existing graduate degree programs at universities in the province. With the growing demand for nondegree graduate study, OCGS has been concerned to ensure that any nondegree study is also brought under the mantle of its appraisal process.

The universities of Ontario have voluntarily bound themselves that no new graduate program can commence until it has been appraised and found to be of good quality. Thereafter all existing graduate programs are periodically reappraised on a 7-year cycle, and they may continue admitting students only if they are found to be of good quality. Within the seven-year cycle of periodic appraisal, all graduate programs in the province in the same discipline are appraised at the same time, but the OCGS appraisal process does not rank graduate programs or universities. Rather, the purpose of the exercise is to ensure that any graduate program offered in the province meets or exceeds a quality standard that is not simply adequate, or acceptable, but genuinely good.

The appraisal process requires extensive documentation in the form of an appraisal brief, and in the case of all proposed new programs and approximately half of the periodic appraisals involves visits and reports by external consultants. Without going here into the details of the appraisal process, a classification of Good Quality will be awarded to the program if:

- the program's objectives are appropriate and are being met;
- the faculty complement is appropriate for the level and scope of the program;
- the core faculty are actively engaged in research in the disciplinary area(s) of the program;
- the curriculum design is appropriate;
- the resources, such as laboratories, libraries, computer facilities and research support, are appropriate;
- enrollments are commensurate with the resources available;
- students complete the program in a timely fashion; and
- there is evidence of appropriate financial support for students.

It is in the context of this appraisal process that OCGS has viewed the expanding demand for, and prospective supply of, nondegree programs at the graduate level. Because the local vocabulary in the province of Ontario treats certificates as purely undergraduate phenomena, and diplomas as credentials offered by community colleges, the terminology adopted to refer to nondegree programs at the graduate level has been "graduate diplomas." As a policy principle, OCGS has sought to ensure that the integrity of its appraisal process is maintained, and that graduate diploma programs are brought under the appraisal process. Consistent with the operation of the appraisals process for degree programs, the universities of Ontario cannot offer, or advertise, a graduate diploma without prior appraisal of its quality, and thereafter cannot continue to offer the graduate diploma without successful periodic reappraisal.

One challenge confronting any attempt to develop a policy dealing with nondegree graduate study is to define the boundaries of the subject addressed by that policy. In Ontario, the term "graduate diploma" is used to describe a variety of programs, which have the following characteristics in common:

1. Academic credit is awarded for the courses taken, and the program completed. That is, this is not noncredit continuing education.
2. A 4-year honors bachelors degree (or equivalent) is required as preparation, or as a basis for admission. In other words, these programs are at the graduate level.
3. They are primarily based on coursework, rather than a research-based thesis or dissertation.
4. Their requirements are less extensive or demanding than those for a master's degree in the same discipline.

A variety of initiatives of these kinds have been undertaken at Ontario universities or elsewhere. It has been helpful to develop a typology of graduate diploma programs as a framework for the development of policy. From the point of view of the OCGS appraisal process, graduate diplomas can be divided into four types, which

have been imaginatively labeled Type 1, Type 2, Type 3 and Type 4.

Type 1 Graduate Diploma: This graduate diploma is awarded when a candidate who has been admitted to a master's program leaves the program after completing a predetermined subset of the degree requirements. For example, some Master of Business Administration programs offer this possibility to students who have successfully completed one-half of the required courses, or 1 year of the 2-year program.

It is important to note that students are not admitted directly to a Type 1 graduate diploma program, but to the master's degree program itself. A Type 1 graduate diploma program is not self-standing, but is an identified part of the degree program.

The courses students will have taken to qualify for the graduate diploma are courses from the curriculum of the degree program, and which are credited toward that degree. The initial or periodic appraisal of the degree program has found those courses, and the curriculum of which they are a part, to be of good quality. Accordingly a Type 1 graduate diploma does not require separate appraisal, since the parent program is appraised, but the graduate diploma program should be identified in the university calendar and in the appraisal brief.

Type 2 Graduate Diploma: This graduate diploma is offered in conjunction with a master's or doctoral degree and provides an additional, frequently interdisciplinary, qualification earned simultaneously with the degree. For example students pursuing a master's or doctoral degree in a social science discipline might seek the additional credential of a graduate diploma to signify a specialization in a geographical region (e.g. Latin American studies).

Students do not apply to, and are not admitted directly to a Type 2 graduate diploma program. Students must first have been admitted to a master's or doctoral program and then, once embarked upon their degree program, seek to register also in the graduate diploma program. Students cannot receive only a Type 2 graduate diploma (unlike the situation with a Type 1 graduate diploma), because this graduate diploma is awarded only upon completion of the requirements for the degree. It is an enrichment, or enhancement of the degree, not an alternative to it.

As an enrichment or enhancement, it is important that the graduate diploma be a meaningful credential. It is not possible for a student to receive both a degree and a graduate diploma by double-counting the same courses toward both sets of requirements. The graduate diploma is intended to provide an additional qualification for additional work. While the design of individual Type 2 graduate diploma programs varies and some overlap of requirements may be permitted, nonetheless some significant portion of the requirements for the graduate diploma must be over and above the requirements for the degree.

Because a Type 2 graduate diploma requires work additional to the degree requirements, a proposed new Type 2 graduate diploma program must undergo appraisal to ensure that quality standards are met. Thereafter Type 2 graduate diplomas require periodic appraisal in conjunction with the degree programs with which they are associated.

Type 3 Graduate Diploma: This graduate diploma is a stand-alone, direct-entry program, which is not additional to a master's or doctoral degree. It is normally offered by an academic unit that does not offer a graduate degree program.

Unlike Type 1 or Type 2 graduate diploma programs, students apply directly for admission to the graduate diploma program. Because there is no associated graduate degree program, a Type 3 graduate diploma program must undergo appraisal and be found to be of good quality before it may commence, and thereafter it must be periodically reappraised on a 7-year cycle. A Type 3 graduate diploma program is very much like a graduate degree program, except that its requirements are not sufficient to warrant the awarding of a master's degree. But the appraisal process must ensure that those requirements are only quantitatively, and not qualitatively, less than those of a graduate degree.

Type 4 Graduate Diploma: This graduate diploma is also a stand-alone, direct-entry program, which is not additional to a master's or doctoral degree. However what distinguishes a Type 4 graduate diploma from a Type 3 graduate diploma is that it is offered by a unit which already offers a master's, and sometimes a doctoral, program. The Type 4 graduate diploma encompasses an appraised and approved element (i.e. a field or a sub-specialization) of that existing degree program.

A Type 4 graduate diploma is typically offered to suit the needs of a particular clientele or market. Demand appears to be increasing in certain disciplines. It is important to allow universities to

respond to this demand while at the same time ensuring that the quality of what is offered maintains the standards of quality expected by the appraisal process.

Accordingly, a proposed new Type 4 graduate diploma program must undergo appraisal and be found to be of good quality before it may commence, and thereafter it must be periodically reappraised. This appraisal is normally simpler and faster than the appraisal of a graduate degree program, because the Type 4 graduate diploma is a sub-specialization within an existing appraised and approved degree program. However appraisal is required to ensure that the criteria listed above are met in this specialized area.

OCGS is confident that these policies will ensure that all graduate education in the province of Ontario, whether in pursuit of a master's or doctoral degree, or of a graduate diploma, will be held to the same quality standards.

For further information about OCGS and its appraisal process, please contact Nicole Begin-Heick, executive director, Ontario Council on Graduate Studies, at the following email address: <cfilteau@coupo.cou.on.ca>

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Council of Graduate Schools
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Appendix I
Reporting CGS Members and Number of Programs

University	Number of Programs
Denver	37
Massachusetts-Lowell	22
SUNY- Albany	20
Rutgers	13
North Carolina-Greensboro	11
South Carolina	11
Kentucky	9
Northeastern	8
Central Michigan	7
Arizona State	6
Charleston	6
CUNY	5
Emerson	4
Rowan	3
Wright State	3
Columbia	2
Northern Arizona	2
SUNY-Stony Brook	2
Alabama-Birmingham	1
Eastern Washington	1
Medical College of Ohio	1
Memphis	1
Oklahoma State	1
Utah State	1
Virginia Commonwealth	1
William and Mary	1
Total	**179**

Appendix II
Number of Programs Reported by Discipline

Discipline	Number of Programs
Computing	26
Business	13
Education	11
Health Care	11
Gerontology	9
Environment	8
Nursing	7
Women's Studies	5
Medieval Studies	4

The average number of credit hours required in the reported programs is 15.2.

Appendix III
Compilation of E-mail Submissions from Reporting CGS Schools

Alabama – Birmingham
We offer two types of certificates. One requires Board of Trustees approval, is recorded on transcripts, and comes with a diploma-like object. These are limited in number at the graduate level, although we do have a successful one in gerontology and have discussed several others. They require admission to a program and a defined curriculum of 15-24 hours. The other type is more informal: students who complete specialized coursework in an interdisciplinary area may awarded certificates in that area (e.g., neuroscience) even though they receive a Ph.D. in cell biology or something else.

Joan F. Lorden
Associate Provost for Research and Dean of the Graduate School
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Arizona State University
We have a number of certificate programs (e.g., gerontology, medieval studies, scholarly publishing, renaissance studies, etc.), and we are in the midst of encouraging and approving new ones (e.g., transportation studies, post-master's nurse practitioner, etc.). The graduate college strongly supports certificate programs over new degree programs. Accordingly, we have developed a set of guidelines and procedures for proposing and gaining approvals for them.

Bianca Bernstein
Dean, Graduate College
<berstein@asu.edu>

The Graduate School and University Center, City University of New York (CUNY)
At the CUNY Graduate School we also encourage certificate programs over new doctoral programs. We currently have certificate programs in women's studies, renaissance studies, medieval studies, film studies, and American studies. All of our certificate programs must be interdisciplinary; thus, they include faculty and courses from several departments as well as offering one or two integrating courses. Students must be accepted into a traditional doctoral program, then if they elect to participate in the certificate program, they take the core courses and conduct their dissertation research in the area of the certificate studies.

Upon completing the requirements for the traditional program, as well as those of the certificate program, the student graduates with both. Our experience is that the job prospects are enhanced by the dual credentials. For example, a student may complete the Ph.D. in psychology and also obtain a certificate in women's studies. The market opportunities are broadened and the student finds more options available.

I should make clear that the cooperation and approval of the faculty must exist for this to work. If the student's traditional program faculty do not want the student to take courses outside of the discipline, they can make the workload for the student insurmountable. However, in most situations at the CUNY Graduate School the faculty themselves are engaged in interdisciplinary research, therefore, the student can readily find mentors who cut across the boundaries and their dissertation and course work readily meet the needs of the traditional program with only few additional courses (often filling elective slots) to complete the certificate.

Pamela Trotman Reid, Ph.D.
Associate Provost and Dean for Academic Affairs
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University of Dayton
We offer a Post Graduate (MBA) Business Certificate for business professionals in each of the business areas in which the MBA offers concentrations. The certificates are part of our revised MBA curriculum package.

Katy E. Marre
Associate Dean for Graduate Studies
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Eastern Washington University
At Eastern Washington University, the College of Business and Public Administration, through its Health Services Administration program offers graduate courses and a graduate certificate program in health services administration.

Students who wish a Health Service Administration Certificate must successfully complete 20 credits of graduate level courses. Any 12 of these credits may be used as half of the 24 credits of electives for the Master of Business Administration degree, or to meet the 12 credit Professional Specialization Option required in the Master of Public Administration degree.

Ronald H. Dalla
Dean of the Graduate School
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University of Kentucky
I have suggestions, proposals, requests, and demands for graduate certificate programs coming out my ears. Most of them are in the 9-12 credit range. At this point, we issue graduate certificates in social theory, medical management, environmental studies, gerontology, health psychology, and a few others I cannot remember at the moment.

Michael Nietzel
<nietzel@pop.uky.edu>

University of Massachusetts – Lowell
At UMass-Lowell we now have 26 different certificates that feed into our master's and doctoral programs. They can be viewed on our website <www.uml.edu>

<lincolna@woods.uml.edu>

Medical College of Ohio
The Medical College of Ohio offers a post-master's Family Nurse Practitioner Certificate Program (FNP-C) for individuals who have completed a master's degree in a clinical nursing specialty and who desire to obtain specialized knowledge to seek certification as an FNP. All courses are at the graduate level and individuals who complete the program are qualified to take the certification examination offered by the American Nurses Credentialing Center for family nurse practitioners.

Keith K. Schlender
Dean, Graduate School
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University of Minnesota, Minneapolis, West Bank
I'm glad to see your request for further info on certificate programs. I'm still trying to shape up a policy for Minnesota. In the meantime, I would appreciate copies of what you get.

One of the concerns we have here is how to structure a grad school approach which does not seem to usurp legitimate interests in offering post-baccalaureate certificates by other units such as extension. More later, I hope.

Robert K. Leik
<leik@atlas.socsci.umn.edu>

University of Missouri – St. Louis
We offer only 18 hour Graduate Certificate Programs. Furthermore, the state Coordinating Board for Higher Education requires that the Graduate Certificate be within an established degree program, so in all areas in which we offer Graduate Certificates, we also offer at least a master's degree.

The section from our Rules and Regulations regarding Graduate Certificates follows:

Graduate Certificate Programs

7.1. Credit Requirements

A minimum of 18 hours of course work is required for a graduate certificate. At least 12 of these hours must consist of courses drawn from the list of core courses for the particular certificate program. At least 12 hours must be completed in residence at UM-St. Louis. At least 9 hours must be at the 400 level. No more than 6 hours may be independent study.

7.2. Admission

Each graduate certificate program may determine eligibility standards beyond the minimum for admission to the Graduate School.

7.3. Enrollment (Revised 3/95)

Full-time status is defined in Section 3.4. Individual departments may require higher enrollments than this.

7.4. Filing the Degree Program

A graduate student enrolled in a certificate program is required to file a Program for Graduate Certificate with the Graduate School before completing the first two-thirds of the number of hours required in the program. If a change is t o be made in a certificate program after it has been filed, a Petition for Change in Degree Program must be filed in the Graduate School.

Douglas Wartzok, Ph.D.
Associate Vice Chancellor for Research & Dean of the Graduate School
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Northeastern University
At Northeastern University, a nondegree certificate program is defined to be "a program of study requiring at least 5 graduate courses or 16 quarter hours of graduate credit, but no more than 40 quarter hours of graduate credit, except as may be required by an accrediting or professional certification body. Successful completion of a certificate program will be recorded on the student's transcript. Appropriate graduate credits taken as part of a non-degree certificate program may be counted toward a regular graduate degree, at the discretion of the committee in charge of the degree program."

We currently have eight programs:
Banking and Financial Services, Human Resources Management, Information Resources Management, Service Industry Security, Logistics and Transportation, Early Intervention, Women's Studies and Cinema Studies

We also established a "fast-track" procedure for the approval of such certificates, so approval can come in about three months compared to the usual 12-18 needed for a full-fledged degree program.

Mitchell Wand
Chair, Executive Committee, University Graduate Council
College of Computer Science
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College of William and Mary
We have recently begun a program in computational science at the College of William and Mary that provides a student with the opportunity to receive a degree from a participating department with the citation "With a Specialization in Computational Science." More details are provided in the attachment below. I serve as director of the Computational Science Cluster and would be happy to provide you with additional information.

William and Mary's new Computational Science Cluster (CSC) was created to facilitate interactive research and education between the University's departments and schools that share an interest in using computing to advance research and education. The Cluster currently has some 25 affiliated faculty from six areas: the departments of applied science, chemistry, computer science, mathematics and physics and the School of Marine Science. It is administered by a Director and a Committee, all of whom are affiliated faculty members. M.A., M.S. and Ph.D. degrees are awarded by the affiliated department or school with the citation "With a Specialization in Computational Science".

Admissions:

The CSC and affiliated departments/schools are actively seeking highly motivated graduate students to participate in computational science. Prospective degree students will apply to a CSC-affiliated department/school with their computational science interest noted on the application. Each department/school will then review the applications consistent with its admission policies.

Curriculum Requirements:

Ph.D. students will have their plan of study approved by the Executive Committee of the CSC. They will be expected to take at least three courses outside of their home department, at least two of which will be chosen from a list of approved courses provided by each department. For example, a student in the physics department might select two computational science courses from the list of approved courses offered by the computer science department and two elective courses offered by the applied science department.

M.S. students will also have their plan of study approved by the Executive Committee. They will be expected to take at least two courses outside of their home department, one from the approved list and one elective.

Thesis Requirements:

The Ph.D. thesis must incorporate computation in a creative way, either by developing an enabling computational technology, or by using such technologies to obtain a significant scientific result. The thesis plan must be approved by the student's thesis committee, at least one member of which must be outside of the student's department. The director of the CSC will serve on all such committees. In addition, the thesis advisor must be a member of the CSC's affiliated faculty. All other thesis requirements will be consistent with the student's department.

Robert Voigt
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Appendix IV
Four Year Overview of NJIT Graduate Certificate Offerings

1994-1995 Offerings
Object-Oriented Design (C++)
Project Management
Environmental Infrastructure and Management
Practice of Technical Communications

1995-1996 Offerings
Object-Oriented Design (C++)
Project Management
Environmental Infrastructure and Management
Practice of Technical Communications
Programming Environment Tools
Continuous Process Improvement
Technological Entrepreneurship

1996-1997 Offerings
Object-Oriented Design (C++)
Project Management
Environmental Infrastructure and Management
Practice of Technical Communications
Programming Environment Tools
Continuous Process Improvement
Telecommunications Networking
Health Care Information Systems
Construction Management
Environmental Site Remediation
GIS and Environmental Problems

1997-1998 Offerings
Object-Oriented Design (C++)
Project Management
Environmental Infrastructure and Management
Practice of Technical Communications
Programming Environment Tools
Continuous Process Improvement
Telecommunications Networking
Health Care Information Systems
Pollution Prevention and Control
Managing Human Resources
Robotics, Controls and Emerging Technologies

Appendix V

Profile of Fall 1997 Graduate Certificate Class

New Jersey Institute of Technology

	Fall 97	Fall 96	Spring 97
Course Enrollments	342	218	203
Number in electronic format	151 (44%)	134 (61%)	112 (55%)
Estimated Revenue	$382,000	$226,000	$218,000
Head Count	283*	178	172
Number who are new enrollees	150 (53%)	111 (62%)	72 (42%)
Number interested in NJIT MS	132 (47%)	90 (51%)	143 (83%)
Number with M.S.	44 (16%)**	41 (23%)	42 (24%)
Number of women	80 (28%)	39 (22%)	41 (24%)
Number out-of-state/country	23 (8%)	14 (8%)	16 (9%)

*247 in graduate courses; 28 in prerequisites; and 8 in both graduate and prerequisite courses.
**includes 10 with Ph.D.s, and 2 with P.E.s

Head Count by Program

	Fall 97	Fall 96	Spring 97
Object-Oriented Design	76 (27%)	76 (43%)	64 (37%)
Project Management	53 (19%)	39 (22%)	34 (20%)
Telecommunications Networking	42 (15%)	15 (8%)	19 (11%)
Programming Environment Tools	27 (10%)	16 (9%)	15 (9%)
Polymer Engineering*	22 (8%)	n/a	n/a
General Management*	22 (8%)	n/a	n/a
Health Care Information Systems	11 (4%)	4 (2%)	13 (8%)
Managing Human Resources	9 (3%)	n/a	n/a
Environment Infrastructure	7 (2%)	4 (2%)	5 (3%)
Technical Communications	5 (2%)	11 (6%)	8 (5%)
Continuous Process Improvement	4 (1%)	5 (3%)	7 (4%)
Robotics, Controls, & Emerging Tech	2	n/a	n/a
Construction Management**	2	5 (3%)	5 (3%)
Environmental Site Remediation**	1	3 (2%)	2 (1%)

*Company Collaborative Program
**Retired Certificate

Number of certificates finished in summer 1997: 7
Total certificates awarded prior to Fall 97 semester: 66
Total M.S. students with completed certificates: 35

Appendix VI

Approval Process for Curriculum Programs/Proposals

Arizona State University Main Campus

The programs/proposals on this matrix require approval from the appropriate dean/deans before submission to the provost. See attached calendar for due dates.

PROGRAM/PROPOSAL	DEANS	SENATORS AT LARGE	CURRICULUM AND ACADEMIC PROGRAMS COMMITTEE (CAPC)	ACADEMIC SENATE	ADMINISTRATIVE APPROVALS	CHIEF ACADEMIC OFFICERS	ARIZONA BOARD OF REGENTS
Planning requests for new degree programs[1,2,3]	2 weeks for review	Information only	Information only	Information only	Provost	Recommendation required	Approval required (December and May/June)
Establishment, disestablishment, name change, or merger of a degree program[1,2,3]	2 weeks for review	Information only	Recommendation required	Recommendation required	Provost/President	Recommendation required	New programs, approval required (December and May/June); all others, executive director approves and reports to board for consideration
Establishment, disestablishment or name change of areas of emphasis, concentration, minors, etc.[1,5]	2 weeks for review	Information only	Recommendation required	Information only	Vice Provost	No action required, unless no major exists for this area	If no major exists, executive director approves and reports to board for consideration
Establishment, disestablishment, name change, or merger of an academic department or college	2 weeks for review	Information only	Recommendation required	Recommendation required	Provost/President	Recommendation required	New units and disestablishment of college/division, approval required, all others, executive director approves and reports to board for consideration
Establishment, disestablishment, name change, or merger of center, bureau, institute, or lab[6]	2 weeks for review	Information only	Information only (advice may be requested)	Information only	Provost	Recommendation required	Executive director approves and reports to board for consideration
Establishment, disestablishment or name change of certificate programs[1]	2 weeks for review	Information only	Recommendation required	Recommendation required	Vice Provost	Information only	No action required
New courses[4]	2 weeks for review	No action required	Recommendation required from Main Campus Curriculum Subcommittee (MCCS)	Information only	Vice Provost	No action required	No action required
Course deletions and course changes (e.g., prefix, number, title, description)[4]	No action required	No action required	Special cases to MCCS/CAPC; routine changes delegated to vice provost	No action required	Vice Provost	No action required	No action required
College/department program admission requirements[1,7]	2 weeks for review/ approval	Information only	No action required	No action required	Vice Provost	Information only	Reported annually

1 Approval by the Graduate College dean required if applicable.
2 See ACD manual 305-01, Planning and Seeking Approval of New Degree Programs.
3 University Curriculum Advisory Committee Executive Committee recommends to senior vice president and provost.
4 A request for a course to satisfy General Studies requirement(s) must be approved by the General Studies Council following MCCS approval (submitted through the General Studies Program office).
5 See ACD manual 305-12, Approval Process and Regulations for Undergraduate Academic Minors.
6 Council for Research and Creative Activities included with 2-week review similar to the deans' authority for this item.
7 See ACD manual 305-03, Changes in Program or College Admission Standards.

BEST COPY AVAILABLE

Appendix VII
Primary Elements of Certificate Proposals
Arizona State University

- Approval by unit/college governance procedures
- Adequate resources to support the certificate
- Sufficient number of qualified faculty to support the certificate program
- Consideration of how the certificate program will complement or enhance existing degree programs
- Documentation of student/community/market demand
- Procedures and stated qualifications for admission of students to the certificate program
- Specific curriculum (required and elective courses, fieldwork, capstone project)
- Demonstrated capacity for providing adequate advising
- Measures and procedures for verification of completion of the certificate requirements